

injected cold, relieves the condition. Where the frontal sinus is moderate or small in size, the retraction is insignificant. In these cases, the entire resulting deformity is nil. It is, then, of the utmost importance in giving our prognosis as to cosmetic results, that we know the size of the sinus. We can get at this by probing in some cases approximately, in others, transillumination gives us a not very reliable idea of the extent of the cavity. It is only since the introduction in Killian's clinic of the X-ray photographing of the head from behind, that we have an absolute method of determining the amount of deformity we are to expect. This has been worked out very thoroughly by Drs. Killian and Von Eicken, and pictures are made of all cases. This is not the only sphere of usefulness of such pictures; they also show the presence or absence of such sinuses, and of *greatest* importance, indicate very clearly diseased conditions.

A case very much in point, is one of which Prof. Killian told me. Antrum washed out, no pus. Reported to surgical clinic, no disease. Sinus was later opened and found filled with tubercular granulation tissue. The X-ray would have shown this. I have brought with me some such plates, made for me by Dr. C. M. Cooper, in which he has demonstrated most beautifully these points. In one of these plates especially, the presence of pus in the cavities of the left side, is very clearly shown. I have since performed the Killian operation on two of these patients, doing also the Ogston-Luc operation for the antral infection at the same time. The findings at the operation bear out the diagnosis as shown by the plates.

In speaking of the frontal sinus operation, I wish to mention Dr. Jansen's modification of Killian's operation: In order to obviate the necessity of depression in cases where there are large sinuses, he separates the anterior wall from its attachments on all sides, *but the upper*, and then grasping it firmly between the jaws of forceps, turns it forcibly upward, breaking it away and thus forming a hinge joint above. After cleansing out the sinus, he puts this flap back into place. This idea however, is contrary to Killian's theory that retraction, *at least for a time*, is necessary to cure the disease by ablation of the cavity.

There are one or two points on the submucous resection of the nasal septum that I found of advantage. There is always difficulty, after separating the mucous membrane from the cartilage of the septum, of continuing the stripping down over the bony excrescences, which are often the cause of the greater part of the deformity. We are leaving now, the mucopericondrium, and are encountering the mucoperiosteum, and must cut through this either with a scalpel or by vigorous use of our periosteal separator. Attention to this detail will avoid perforation.

This operation certainly has a broad sphere of usefulness. Cases of sinus infection have healed spontaneously when septum deformity has been corrected so that drainage is not interfered with. In

regard to the anesthesia in this operation, Von Eicken employs the tablets of cocain and adrenalin, submucously injected. Well diluted, the solution itself helps to raise the mucous membrane. The anesthesia produced by pledgets of cotton soaked in the solution and applied, does not compare with this method of injection. Ogston-Luc operations I have also seen Von Eicken do under local anesthesia.

Killian has, I think, made a useful modification of this radical treatment of antrum disease. His method of leaving the anterior and posterior ends of the inferior turbinal bone, allows a sufficient drainage, and at the same time, saves valuable parts to the nose. He formerly preserved the mucous membrane of the lateral wall of the nose as far as possible, and placed it in his curetted cavity to aid in the epithelization. This, however, he has found to be of little use and has abandoned the procedure.

In making his diagnostic entrance into the antrum, or in treatment, he chooses the middle meatus, and on a great many of his patients is able to enter through the natural opening.

(I have brought his trocars and canula in case any of you should be unacquainted with them.)

The Killian tubes for direct bronchoscopy and tracheoscopy are in constant use in the clinic. I saw the removal of foreign bodies from the bronchi, and was much impressed by the importance of the tubes for diagnostic purposes.

The same high-class work was carried on in Prof. Axenfeld's clinic, near by. The work done here in the bacteriology of the eye has made the laboratory famous. I saw Prof. Axenfeld do a number of cyclodialysis operations: the comparatively new procedure for chronic glaucoma. I also saw this operation several times in Prof. Fuch's clinic in Vienna, but it was still in too much of the experimental stage for an idea of its value to be obtained.

These are a few of the points that come to mind as I think over the work in the clinic at Freiburg. I was much impressed by the quiet, scientific and thorough manner in which all the work was done there.

LABORATORY METHODS OF DIAGNOSIS IN TYPHOID FEVER.*

BY HERBERT W. ALLEN, M. D., SAN FRANCISCO.

Excluding malaria and possibly diphtheria, there are few, if any, of the acute infectious diseases in which careful laboratory work is of greater assistance in diagnosis than in typhoid fever. In some cases its aid is almost superfluous, in many it assists in early diagnosis, while in a few, diagnosis without it is practically impossible.

In this paper I wish to run over briefly the various methods that are of value in suspected cases. First and probably most important, is the matter of blood cultures. These have been used more or less for many years, but it is only since about

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1900 that the method of adding considerable amounts of blood to large quantities of fluid culture medium has allowed of results constant enough to be of material value in diagnosis. At the present time typhoid bacilli can be easily demonstrated in the blood in at least 80 per cent. of unselected cases. If the results are grouped according to weeks of the disease, the figures are 93 per cent. or over for the first week, 76 to 80 per cent. for the second, about 56 per cent. for the third, and but seldom thereafter. The bacilli have been found as early as the second day; very frequently on the third and fourth days; in other words, at a time when diagnosis by other means is almost impossible. Positive findings have the added advantage that they are unequivocal; they must mean typhoid fever, and are not simulated by any other condition. Under favorable conditions, negative findings have almost as much value as positive ones. The technique is simple, but bacteriological cleanliness must be accurately observed. Any superficial vein will serve; those at the bend of the elbow are usually most convenient. With a good syringe there is usually little difficulty in obtaining 5 or 10 cc. of blood, which is distributed among several flasks of bouillon, 1 or 2 cc. of blood to 200 or more cc. of medium. The procedure, while somewhat unpleasant to the patient, is seldom seriously objected to. Recently it has been advocated, especially by Conradi, to add a small amount of blood to a mixture of ox bile with peptone and glycerin, and make a preliminary incubation of this for sixteen hours, then transplant to lactose litmus agar. By this method diagnosis can be obtained in about 36 hours, and practically all cases are said to give positive results. While blood cultures are not intended for routine work, they should be resorted to in atypical cases, and where early diagnosis is urgently desired.

The serum reaction is of distinctly less value than is the blood culture in several respects; it appears later in the course of the disease; in a few cases it apparently never appears, and it is sometimes positive in conditions other than typhoid fever. Nevertheless, as it is more convenient of application and quicker in its results, it is much more commonly resorted to. It is occasionally positive as early as the third day; frequently by the end of the first week; very commonly during the second week; in a few cases it is delayed until convalescence or even until relapse. The results of many thousands of cases show that the Widal reaction is present during some stage of the disease in about 95 per cent. of all cases. A few, but probably not all of the remaining 5 per cent., are possibly instances of paratyphoid fever. This failure of the test in a few cases is one of its disadvantages. It has the added disadvantage of being at times positive in diseases other than typhoid. Certain cases of jaundice, including the so-called Weil's disease, give positive results at proper dilutions. Many of these cases, however, are being looked upon, in fact are being proven, to be examples of typhoid infection of the biliary apparatus, so that the apparent disadvantage of the test in these cases disappeared. A few instances of acute miliary tuberculosis give positive

Widal reactions, the one condition in which differentiation from typhoid is often so difficult. A negative blood culture in such cases should have great weight. Occasionally other disease conditions will give a positive result, but the number is strikingly small when proper precautions are used. These precautions require mention. The dilution should be high, 1 to 40, or, better, 1 to 50. It is convenient and of no more trouble to make several dilutions, 1 to 10, 1 to 20 and 1 to 50. By observing the extent of the reaction at these graded dilutions, one may sometimes predict a positive result at a time when the higher dilution is not strictly positive. I place no importance on a 1 to 10 dilution alone; I think such a procedure should be dropped. The dilution of choice is 1 to 50, with a time limit of one hour. The typhoid culture should be fresh, not over 24 hours old, and the more virulent the better. We may judge somewhat of the virulence by the motility; the more virulent, the more motile. A control should always be observed. This point, I think, is not as a rule sufficiently insisted upon. A certain degree of clumping may occur spontaneously in cultures, and the extent of this must be known before a result can be properly interpreted. Bouillon cultures are generally used, though personally I prefer agar with water of condensation; the bacilli in this are usually more motile. A positive result should include cessation of motility and very general clumping. When properly performed, a positive or negative Widal reaction may be of very material aid in diagnosis, and should be resorted to in all cases. Positive findings, however, in view of their occasional occurrence in other diseases, must be correlated with clinical evidence. The interpretation of negative results is not so easy. It must be remembered that one or several negative Widal's does not exclude typhoid fever; that occasionally the reaction is much delayed or apparently may never develop, and that we may have to deal with a case of paratyphoid fever. Yet I think we may say that a diagnosis of typhoid fever with negative Widal reaction is very doubtful, unless confirmed by some other positive finding. The introduction of the Ficker diagnosticum, that is, the use of killed cultures and a macroscopic as opposed to the usual microscopic method, has placed the serum reaction within the reach of all practitioners, and there is now no reason why it should not be used in every case.

The leucocyte count frequently gives material assistance in diagnosis, both in a negative and positive way. Leucopenia is the rule in typhoid; we expect counts of 5,000 or under. The other febrile conditions associated with a normal or diminished count are few; most forms of tuberculosis, measles, malaria, influenza and the initial stage of smallpox includes the important ones. Except the first, these are usually easily excluded so that the finding of a leucopenia in a suspicious case is good confirmatory evidence. On the other hand, the presence of a distinct leucocytosis almost surely excludes typhoid fever unless complicated, and this seldom happens in the early stages. I think this fact deserves especial emphasis; herein lies one great value of the

leucocyte count. It is so rare to find an uncomplicated typhoid with a count of over 10,000 that, as I say, we can almost surely exclude it in the presence of a distinct leucocytosis. The differential count does not help us much; the results may be simulated by other conditions; still the finding of an increase in large mononuclear forms with a practical absence of eosinophiles is of some value.

The urine does not give us any very material assistance in diagnosis. The diazo reaction, while present in a large percentage of cases, is found in so many other febrile conditions, that its value is considerably diminished; yet taken in conjunction with other positive findings, we may place some reliance upon it. I should like to emphasize the importance of an accurate mixture of the two diazo reagents in performing the test; forty parts of the sulphanilic acid solution to one of the sodium nitrite. Neglect to observe this point will possibly account for some negative reactions in well marked instances of typhoid. The finding of typhoid bacilli in the urine can seldom be of diagnostic importance, as the cases are usually well advanced by the time the organisms are detected. Similarly the cultivation of the bacilli from the rose spots is of no help, as the spots themselves, with the other findings, give us the diagnosis.

The cultivation of the bacilli from the stools is occasionally resorted to for diagnosis. The method, however, requires special culture medium and very considerable bacteriological skill, and is decidedly inferior to blood cultures. Moreover, it is not applicable to early diagnosis.

Puncture of the spleen is not to be recommended for the diagnosis of typhoid fever. Better results without the attendant danger are to be obtained by blood culture.

These, then, are the principal laboratory methods that help us in making or make for us the diagnosis of typhoid fever. In view of the great assistance that some of them render, I think they should be used even more generally than they are.

I have said nothing in this paper of the value of laboratory findings in the diagnosis of complications, the alterations of the leucocyte count, the detection of occult blood in the faces, etc. These subjects are hardly embraced within the scope of the paper.

THE TREATMENT OF A FEW DISEASES OF THE RECTUM BY THE GENERAL PRACTITIONER.*

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During the past ten or fifteen years the attention of the profession and the laity has been so constantly directed to treatment by specialists, in every conceivable department of medicine and surgery, that I felt it would be a change to think of something for the general practitioner; and I shall attempt to justify his presence among us by claiming he can still be of service in the treatment of a few diseases of the rectum. I say a few of the diseases of the rectum, not that I feel the general

practitioner's field is limited to those I shall mention, but because it is impossible, in a paper of this kind, to do more than superficially consider a few of the diseases of that important organ.

When a patient consults you complaining of trouble with his rectum, do not accept his ready-made diagnosis that he has a bad case of piles, which he will almost invariably give you, or attempt to make a diagnosis from the subjective symptoms and prescribe one of the many ointments or suppositories recommended in the text books, which may be good in their place, but in all probability not the proper treatment for the patient before you. Insist upon a thorough ocular and digital examination of the anus and rectum before attempting to prescribe. If the patient will not permit an examination, tell him neither of you can afford to have you treat him blindly, and positively and politely refuse to treat him until he will submit to an examination. You will thus maintain your own self-respect, and the confidence of the patient.

It would be just as scientific, in most instances, to prescribe a "pile ointment" for a patient for no other reason than that he is a merchant, as it would be to prescribe a "pile ointment" for a patient because he says he has a bad case of piles, or tells you he suffers severe pain in the rectum or anus either continuously or during or after stool.

No symptoms are of any value in making a diagnosis in diseases of the rectum or anus, unless a careful local examination of the parts is made. To make such an examination, place the patient in Simm's position, on a lounge or table, in a good light, separate the buttocks and carefully inspect the anus; if the patient suffers from fissure, external hemorrhoids, prolapsed internal hemorrhoids, prolapsus, fistula with an external opening, or pruritus, you will readily make a diagnosis which will most probably be correct, as far as it goes; but don't stop with your examination for you will frequently find your patient has some trouble with the anal or rectal canal, which perhaps has an etiological relationship with what you have already found, which it is your duty to find, and which must be properly treated before the patient can be cured.

Now lubricate your finger with vaseline or cold cream, paying particular attention to filling in the crease about the nail, and introduce it into the rectum; thoroughly palpate everything within reach, including the prostate in the male, and the cervix, uterus, tubes and ovaries in the female; with the finger, after a little experience, you will readily recognize an ulcer, internal hemorrhoids, fistula, polypus or stricture.

After learning all you can through an examination with the finger, throw a little oil into the rectum and take a rectal speculum, Cook's, Kelsey's, O'Neil's, Brinkerhoff's, Kelly's, or a small conical one, sterilize it by boiling, lubricate it, and slowly introduce it into the rectum, giving the muscles time to relax, remembering that all movements about the rectum must be easy and gentle to prevent spasmodic contraction of the sphincter. Never use a cold speculum. With the speculum you will verify the

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